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10/025,156	12/18/2001	David E. Fredericksen	13477	5773

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ILLINOIS TOOL WORKS

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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 07/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025156

Applicant(s)

Examiner

Group Art Unit

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE — 3 — MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 7/15/03
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-6, 8-21 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-6, 8-21 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 6/17/03 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. ~~Determining the scope and contents of the prior art.~~

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1-6, 8-11, 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leach US 5338578 in view of Smith US 5344672.

Leach teaches powder coating plastic resin substrates comprising steps of: washing/ cleaning substrates followed by drying to remove wash water (per claims 2-4) and heating the cleaned article to a temperature to cause degassing at a temperature of at least the melting point of the powder to be applied; powder coating "by any conventional powder coating technique" whereas the powder melts and uniformly flows to form a liquid coating on the surface of the preheated article (col. 5, 9-13); and then further heating at elevated temperatures above the powder cure temperature to initiate cross-linking and curing. See column 4, 61 to col. 5, 45. It is inherent that the final, cured powder coated product remain undistorted or melted to maintain its viability as a coated product, which is clearly the case in Leach, such that the

temperatures cited must be less than the melting point of the plastic substrate.

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Since the coating methods include fluidized bed or spraying, it is apparent electrostatics are not essential, and there would have been no necessity for grounding the plastic substrates per claims 14 and 17. Plastic substrates are taught to be particularly useful for compression molded parts, but is explicitly recognized to be useful for "other compression and **injection molding** plastics of both thermosetting and thermoplastic type with and without fiber reinforcement" (col. 2, 38-42, emphasis added). Column 4, 64-col. 5, 8 teaches to heat the washed part for a time and temperature to achieve a partial degassing prior to application of the powder coat which melts and flows in contact with the preheated substrate. Such teachings preclude significant curing or cross-linking during pretreatment because this would inhibit/ prevent melting and flowing to form a uniform, smooth liquid surface. Therefore, the temperature of the final curing step MUST NECESSARILY be greater than the preheating temperature to carry out the method of Leach. Applicants' heating step requires a curing temperature "being at least 375 F". Leach teaches curing temperatures "to 375 F". However, one of ordinary skill would have expected, given the guidance and criteria of Leach that temperatures just above 375 F and higher would also have been effective, dependant upon the powder

composition, particle size (larger particle sizes require greater heat input for

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melting), etc. Further, time and temperature are cause effective variable so that one of ordinary skill would have recognized that heating at a higher temperature for a shorter time would have been expected to have provided comparable curing results compared to a lower curing temperature for a longer time because of the expectation of achieving similar degrees of cross-linking/ curing. "Substantially completely degassing the (preheated) article" to be powder coated is not taught.

Smith teaches a similar method of coating plastic articles without limitation (encompassing injection molded plastic parts) which is preheated at a temperature to degas the substrate prior to applying a coating powder per column 4, 30-44. Preheating at a temperature to degass the substrate and to allow the subsequently applied powder to melt and flow on the substrate is taught, the degassing step being essential to avoid deleterious popping of the applied coating due to trapped/ absorbed water or other volatiles during powder curing. Thus, it would have been obvious to one of ordinary skill to have preheated the substrate of Leach at a sufficient time and temperature to "drive out" water and other volatiles as taught by Smith to provide smooth, plastic-coated plastic substrates in which the coating is free of popping defects. The

Examiner also points out Applicants admit in [0030] of their specification that "It

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will be recognized by those skilled in the art that the first drying step is used to reduce the amount of, if not eliminate the "trapped" moisture in the article" to prevent bubble formation from trapped water/ volatiles, thereby further supporting the obviousness of such a step.

As to claim 5, cooling of the cured coated article and plural coatings are not taught. However, cooling of the article would have been an obvious necessity within the purview of one of ordinary skill in the art in order to give the final article utility, since clearly a heated coated article in an oven has no utility. The conclusion of obviousness may be based upon "common knowledge" and "common sense" of the person of ordinary skill, In re Bozek 163 USPQ 545.

Regarding claims 6-11 and 18-19, Leach does not explicitly teach the detailed steps of claim 6 for a second coating. However, Leach does disclose on column 6, 13+ that optionally an additional resin coating may be applied, without further limitation. These are applied by the multi-step coating process discussed above, e.g preheating, coating application, and heating to cure/ cross-link the coating. Thus, since the coated substrate is still a plastic substrate, it is the Examiner's position that one of ordinary skill would have recognized the utility of applying a second coating onto the coated substrate using coating

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steps similar to the first coating in order to achieve the recognized benefits of high gloss finish and a surface free of defects due to trapped gasses.

Regarding claims 15-16, Leach teaches to use carboxylic acid group-containing polyester coating powders (col.3, 50-55) which is synonymous with Applicants' "carboxyl polyester". Leach also teaches on the bottom of column 6 that curing times and temperatures vary depending on the powder coating composition, e.g. at least 250 F, preferably 250-375F; further, preheating is carried out at 150-300 F (col. 4, bottom). These ranges overlap or are close to those of claims 15-16. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the ranges disclosed by the reference were selected because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Wortheim* 191 USPQ 90. Differences such as a curing temperature of "about 400 F" are obvious variations which reflect either differences in coating material, substrate size, etc or the fact that time/temperature are related cause-effective variables such that equivalent results can be obtained by simply increasing times at lower temperatures, or vice-versa. Thus such variations do not patentably distinguish over the prior art

because they are variations within the purview of one of ordinary skill. It would

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have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Leach in view of Smith and to modify times, temperatures, and other conventional variables to achieve a desired end coating because such variations would have been within the purview of one of ordinary skill.

Regarding article claims 20-21, since it has been established above the substrates include injection molded plastics, and the obviousness of preheating to drive out volatiles/ water in such a substrate prior to powder coating to allow formation of a uniform cured coating free of "popping" defects, it is apparent that the products of the combination of references and claims 20-21 would be essentially the same.

5. Claim 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Leach in view of Smith and further in view of Anderson et al US 5516551.

Leach and Smith are cited for the same reasons discussed above, which are incorporated herein. Application of the powder by electrostatic spraying is not cited.

Anderson et al teaches a similar method of powder coating reinforced plastic substrates with similar coating powders in which the substrate is preheated, resin powder is applied to a preheated substrate below the powder cure

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temperature, and then heating the powder coated substrate at or above the curing temperature for a time sufficient to substantially cure the powder (col. 4, 63-col. 5, 15. It is also explicitly noted that temperatures used must not degrade, deform, or damage the articles. Powder is applied "in any conventional manner such as by spraying and preferably by electrostatically applying the powder coating". Since Leach in view of Smith applies the powder by conventional electrostatic and non-electrostatic methods, and Anderson et al teaches the equivalence of applying such powders to similar substrates by electrostatic or non-electrostatic powder coating, it would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Leach in view of Smith by using electrostatic powder coating means as taught by Anderson because such means are demonstrated to be equivalent for applying such powders to the plastic substrates.

RESPONSE TO REMARKS

The Examiner has fully considered Applicants remarks and amended claims. Applicants state on page 8 that "Leach teaches heating the article to a temperature above the curing temperature before applying the coating material" and recites the ranges of col. 5, 32-35 and 64-col. 6, line 2, concluding

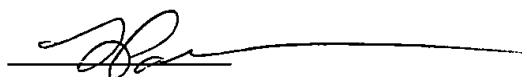
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that because the "ranges overlap to a significant extent", there is no lower portion of a preheat range that is not within the curing range. The Examiner understands this interpretation, but notes that Leach also states (and Applicants recognize) "curing times and temperatures will vary somewhat depending on the powder coating composition". Thus, preheating is carried out at 250-350 F and curing is taught "at least 250F, preferably 300-375 F", without limitation as to powder coating composition used. Given the criticality of having the powder coat melt and flow on the preheated substrate and then curing in a subsequent step, the ranges clearly permit, for example, a preheat of 300F to cause melting and flowing to form a uniform liquid coat, followed by curing at 375 F to harden the uniform coating. At best, the overlap raised by Applicants' argument leaves open *the possibility* that an article may be preheated to a given temperature to cause melt and flow, followed by a very long time at the same given temperature to cause cross-linking, on a composition where cross-linking is thermodynamically very sluggish at the given temperature, the overlap being simply a reflection of securing complete patent protection of Leach for such a possibility. Nothing explicitly teaches that preheat and curing temperatures must identical for a given composition so that curing/ cross-linking occurs in both heating steps. Again, to do so would defeat the advantage of preheating to

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melt and flow to form a smooth uniform LIQUID coating, which would not be able to occur if hardening/ curing and cross-linking occurred. Thus while the Examiner understands Applicants' interpretation, it is his position that given the entirety of the teachings of Leach, Applicants' narrow interpretation of the prior art is not sustainable.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred J. Parker whose telephone number is (703) 308-3474.



**FRED J. PARKER
PRIMARY EXAMINER**

Fred J. Parker

July 22, 2003

fr10-025186
